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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/912,865	07/25/2001	Georges Marcel Victor Thielen	DN2000147	6253

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The Goodyear Tire & Rubber Company  
Patent & Trademark Department - D/823  
1144 East Market Street  
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EXAMINER

FISCHER, JUSTIN R

ART UNIT PAPER NUMBER

1733

DATE MAILED: 04/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/912,865

Applicant(s)

VICTOR THIELEN, GEORGES  
MARCEL

Examiner

Justin R Fischer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,4-6,8-14 and 17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-6,8-14 and 17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4-6, and 8-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oare (US 5,342,900, of record) and further in view of "Vulcuren® Trial Product KA 9188" Brochure (of record) and Freeman (US 5,494,091, of record).

As best depicted in Figure 2A, Oare is directed to a runflat tire having at least one sidewall insert radially inward of a carcass ply, wherein said sidewall insert is formed of a diene-based rubber composition. In describing the conventional additives of the insert composition, Oare suggests a vulcanization system having sulfur donating vulcanizing agents, particularly sulfur in an amount between 0.5 and 8 phr (Column 18, Lines 10-20). While Oare fails to suggest a vulcanization system including 1,6-bis (N,N'-dibenzylthiocarbamoyldithio)hexane, this compound is recognized in the rubber industry as being a valuable vulcanizing agent (crosslinking agent) when used with sulfur in the curing of a variety of rubber mixtures, including those formed of natural rubber, isoprene rubber, styrene-butadiene rubber, and butadiene rubber, as shown for example by Vulcuren. In particular, Vulcuren suggests that highly reversion-stable vulcanizates are formed by including the claimed additive and further that improved

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retention of properties, such as modulus, hardness, and heat build up (hysteresis), are realized. These benefits are consistent with those commonly associated with runflat insert compositions (suggests that retention of these properties would also be desired). In describing the runflat composition, Oare describes said composition as having high stiffness (modulus/hardness) and low hysteresis (heat build up) (Column 15, Lines 30-32). Freeman has been additionally applied to further evidence the desired benefits of a runflat insert composition, particularly high stiffness (modulus/hardness), low heat build up or hysteresis, and good resistance to heat (high reversion resistance and good ageing) (Column 5, Lines 20-40). It is emphasized that the benefits detailed by Oare and Freeman are consistent with the benefits imparted by the claimed additive and as such, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the claimed additive in the vulcanization system of Oare. As noted above, the combination of references clearly suggest that high modulus and hardness and low hysteresis are desired properties for the runflat insert- one would similarly expect retention of these properties to be a desired property.

It is initially pointed out that Vulcuren discloses the following in regards to the use of the claimed additive:

- Preferred use in diene rubber compounds, such as natural rubber, isoprene rubber, styrene butadiene rubber, and butadiene rubber
- Provides highly reversion stable vulcanizates
- Recommended use in combination with sulfur and accelerators
- Recommended dosage between 0.5 and 3.0 phr

- Provides improved retention of properties (e.g. modulus, strength, hardness, hysteresis)

Each of the above noted details set forth by Vulcuren is satisfied by Oare or is consistent with runflat technology and also meets the limitations of the claimed invention. First, as is common in the tire industry, Oare suggests the runflat composition be formed of diene-based rubbers, such as natural rubber, isoprene rubber, styrene butadiene rubber, and butadiene rubber (Column 16, Lines 25-40). Second, as recognized in the tire industry and further expressly evidenced by Freeman, it is desired for the runflat component to exhibit high reversion resistance or resistance to the negative effects of sulfur breaking down and surfacing over time. Third, the runflat component of Oare is a sulfur vulcanizing system in which accelerators, such as thiazoles, are used (Column 18, Lines 11-45). Fourth, the claimed invention requires the claimed additive be used in an amount between 0.5 and 1.5 phr, which is fully incorporated by the range described by Vulcuren. Lastly, as set forth above, the benefits of high modulus, strength, and hardness and low heat build up are recognized as being desirable in a runflat component and one of ordinary skill in the art at the time of the invention would have similarly expected it to be desirable to improve the retention of the same properties.

As to the amount of the claimed additive, Vulcuren suggests the use of said additive in an amount between 0.5 and 3.0 phr when used in combination with sulfur.

Regarding the amount of filler, Oare describes the use of carbon black in an amount between 30 and 100 phr (Column 17, Lines 37-40).

With respect to claims 4, 8, 11, and 14, Oare describes the use of natural cis 1,4 polyisoprene rubber, isoprene/butadiene rubber, cis 1,4 polybutadiene rubber, and vinyl 1,2 polybutadiene rubbers (Column 16, Lines 26-40). It is noted that one of ordinary skill in the art at the time of the invention would have readily appreciated and expected the polybutadiene rubber of Oare to be syndiotactic, as is common in the tire industry. With specific respect to claim 8, this limitation is only required when a rubber coupled with a group IVa metal is selected. It is noted, though, that such a rubber (coupled with metal) is extensively used in the manufacture of sidewall components and one of ordinary skill in the art at the time of the invention would have found it obvious to form the sidewall insert of Oare from a metal-coupled rubber.

Regarding claim 5, Oare suggests the use of several bifunctional sulfur containing organo silane coupling agents in accordance to the limitations of the claimed invention (Column 17, Lines 55-61).

With respect to claim 6, Oare further suggests the filler component contain silica in addition to carbon black, as is well known in the tire industry (Column 17, Lines 51-55).

Regarding claim 12, Figure 2A of Oare depicts a first crescent-shaped, sidewall insert 42 that is disposed axially inward of a carcass ply 38 and a carcass ply 40.

With respect to claim 13, Oare is directed to the use of different cords in the inner and outer carcass plies, wherein a specific embodiment is described in which the inner carcass is formed of high modulus, steel cords and the outer carcass is formed of lower modulus organic fiber cords (Column 3, Lines 5-15).

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3. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oare, Vulcuren, and Freeman, and further in view of Saneto (US 5,342,900, of record). Oare, in view of Vulcuren and Freeman, suggests a runflat insert composition having 1,6-bis(N,N'-dibenzylthiocarbamoyldithio)hexane in an amount between 0.5 and 3.0 phr when used in combination with sulfur to define the vulcanization system. In describing the insert composition, Oare describes the general use of a mixture of natural rubber and polybutadiene rubber and further a preferred composition having between 60 and 90 phr of natural rubber and between 10 and 40 phr of a synthetic rubber, such as polybutadiene (1,4 and 1,2 are suggested), wherein the 100% modulus is between 5 and 7 MPa. While these ranges (amount of each rubber) are slightly outside of the claimed ranges, Oare is not restricted to this composition, as evidenced by the language "preferred composition". One of ordinary skill in the art at the time of the invention would have readily appreciated additional rubber compositions for the sidewall insert formed of natural rubber and polybutadiene rubber in accordance to the ranges of the claimed invention, such that said composition provides the necessary properties (e.g. 100% modulus) desired for a runflat sidewall insert. For example, Saneto describes a similar runflat tire construction in which a sidewall insert is positioned inside of an innermost carcass ply, in an analogous manner to the claimed invention, and formed of between 30 and 45 phr of natural rubber and between 55 and 70 phr of polybutadiene rubber (Column 3, Lines 13-55). In this instance, such a rubber composition has a 100% modulus between 5.9 MPa and 9.8 MPa, which encompasses nearly the entire range of values disclosed by Oare. Thus, it would have been obvious

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to one of ordinary skill in the art at the time of the invention to form the sidewall insert with natural rubber and polybutadiene rubber in accordance to the limitations of the claimed invention, as further set forth below.

Regarding claim 17, Oare further suggests (in the insert composition) that (i) carbon black is included in an amount between 30 and 100 phr and (ii) sulfur is included in amount between 0.5 and 8.0 phr. It is noted that the inclusion of the claimed additive to the vulcanization system of Oare would slightly reduce the amount of sulfur used.

Lastly, regarding the sidewall insert composition, Saneto illustrates that rubber compositions having natural rubber and polybutadiene rubber within the claimed ranges are recognized as providing suitable properties to impart a desired degree of runflat operation. Though the polybutadiene component is not expressly disclosed as being formed of both 1,2 and 1,4 polybutadiene, Oare suggests the use of each of the polybutadiene rubbers in the runflat sidewall insert (Column 16, Lines 26-40). It is noted that one of ordinary skill in the art at the time of the invention would have recognized the polybutadiene of Oare as being syndiotactic polybutadiene. Thus, one of ordinary skill in the art at the time of the invention would have readily appreciated a polybutadiene component in the runflat insert of Oare between 50 and 80 phr, in view of Saneto, and furthermore, one of ordinary skill in the art would have readily appreciated the inclusion of both 1,2 and 1,4 polybutadiene to form said polybutadiene component in view of the recognition by Oare that each polybutadiene is a commonly used component in sidewall runflat inserts, there being no evidence of any unexpected results to establish a



criticality for the claimed runflat rubber composition, regarding the base rubber composition (absent any additives).

***Response to Arguments***

4. Applicant's arguments filed February 17, 2004 have been fully considered but they are not persuasive. Applicant argues that the references fail to teach or suggest the use of the claimed additive in a rubber composition suitable for use in a runflat insert, let alone the claimed amount. Applicant further argues that the claimed additive is described as providing improved retention of properties and improved properties. Lastly, applicant contends that Vulcuren actually teaches away from the claimed invention in that it suggests the use of little or no sulfur while the claimed invention requires between 1.5 and 6 phr of sulfur.

As to the first argument, Vulcuren specifically states that the claimed additive is used in combination with sulfur and accelerators to produce a highly reversion stable vulcanizates of a diene rubber, such as natural rubber, isoprene rubber, styrene butadiene rubber, butadiene rubber. Each of these properties or characteristics is consistent with compositions used as runflat inserts. It is noted that the runflat insert of Oare is formed of a diene-based rubber and a vulcanizing system comprising sulfur and accelerators, wherein said insert is desired to exhibit high reversion resistance. These points are further emphasized in the rejection above on page 4. As such, there is a reasonable expectation of success for this combination- in particular, one of ordinary skill in the art at the time of the invention would have expected the runflat insert of Oare in view of Vulcuren to have high reversion resistance and improved property retention.

Regarding the second argument, it is agreed that Vulcuren actually improves the retention of properties, such as modulus and hardness, as opposed to providing improved properties, such as high modulus and high hardness. However, if it is desired to have high hardness, high modulus, high strength, and low hysteresis, one of ordinary skill in the art at the time of the invention would have similarly desired a composition in which these properties were retained over time. Therefore, it would have been equally desired to improve the retention of these properties, which is a benefit directly attributed to the use of the claimed additive in a diene based rubber composition having sulfur and accelerators. Also, Vulcuren expressly suggests that high reversion resistance is obtained in rubber compositions having the claimed additive- this property is recognized as being desirable in runflat inserts. Thus, one of ordinary skill in the art at the time of the invention would have been motivated to include the claimed additive in the runflat composition of Oare.

Lastly, applicant contends that Vulcuren teaches away from the claimed invention. As mentioned above, Vulcuren suggests that the claimed additive is included in an amount between 0.5 and 3.0 phr (Page 2), which incorporates the entire claimed range of 0.5 to 1.5 phr. The reference further states that the usual amount of sulfur should be slightly reduced to maintain comparable crosslinking density. This statement, though, does not suggest that sulfur can only be used in an amount below 0.5 phr as argued by applicant. In fact, in view of the exemplary embodiments described by Vulcuren, there appears to be an inverse relationship between the amount of sulfur and the amount of claimed additive. The reference suggests the following exemplary

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embodiments: (a) 0 sulfur and 7 phr of the claimed additive and (b) 0.5 phr of sulfur and 2.5 phr of the claimed additive. It is noted that the use of 2.5 phr of the claimed additive is at the extreme upper end of the suggested range- one of ordinary skill in the art at the time of the invention would have expected the amount of sulfur to increase in additional embodiments in which the claimed additive is used in smaller amounts, such as 1 and 1.5 phr. There is absolutely nothing in Vulcuren that suggests that the claimed additive is not usable in compositions having greater than 0.5 phr of sulfur and as such, the reference is not seen to teach away from the claimed invention.

### ***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R Fischer** whose telephone number is **(571) 272-1215**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Justin Fischer

April 16, 2004

  
JEFF H. AFTERGUT  
PRIMARY EXAMINER  
GROUP 1300